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EXAMINER	
NGUYEN BA, HOANG VU A	

ART UNIT	PAPER NUMBER
2192	

DATE MAILED: 06/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/083,670	BACHMAT ET AL.	
	Examiner	Art Unit	
	Hoang-Vu A. Nguyen-Ba	2192	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 27 January 2005.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-29 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-29 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This action is responsive to the amendment filed January 27, 2005.

Response to Amendments

2. Per Applicants' request, Claims 1-3, 5, 11, 13-18, 20-21, 26 and 28-29 have been amended. Claims 1-29 remain pending.

3. The objection to the declaration because it does not include the signature and date of inventor Eitan Bachmat is withdrawn in view of Applicants' submittal of a copy of the signed and dated declaration by the inventor, which was originally filed with the application.

4. The objection to the drawings is withdrawn in view of Applicants' argument and choice. However, the examiner notes that the showing of the source of branch 22 or the input data-stream in Figure 2 would assist the Office in better understanding the claimed invention.

5. The rejection of Claim 15 under 35 U.S.C. § 101 is withdrawn in view of Applicants' amendments to this Claim to direct the claim to statutory subject matter.

Response to Arguments

5. Applicants' arguments regarding the descriptiveness of the title have been fully considered but they are not persuasive because:

a. the "dynamic demonstration" is not explicitly or implicitly claimed in the Claims;

b. Claim 1, among other Claims, clearly recites "**evaluating** a competing-algorithm score predictive of a corresponding **performance** of said **competing algorithm**;"

The title of the invention is thus not descriptive and clearly indicative of the

invention to which the claims are directed. The objection to the title is maintained.

6. The objection to the abstract of the specification is withdrawn in view of Applicants' clarification of the intended meaning of the term "performance" used in the disclosure and in the Claims.

7. The objection to Claims 14 and 29 is withdrawn in view of Applicant's amendments to these claims to add the conjunctive – and – at the end of the limitation preceding the last limitation of the claim and in view of Applicant's argument that the presence of the modifier "competing-algorithm" before the term "performance" clearly indicates that the performance referred to is that of the competing algorithm, and not of that of the incumbent algorithm.

The examiner, however, notes that without the modifier, one would understand that the performance being referred to is that of the competing algorithm because the limitation would read as "performance of said competing algorithm." The removal of "superfluous verbiage" would "assist the Office in better understanding the claimed invention."

8. The rejection of Claims 2-5, 7, 9-11, 13-14, 16-22, 24-26 and 28-29 is withdrawn in view of Applicants' clarification of the identified terms and phrases that are vague and indefinite.

9. Applicant's arguments with respect to the rejection of Claims 1-29 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,809,282 to Cooper et al. ("Cooper") have been fully considered but they are not persuasive. The following is an examiner's response to Applicants' arguments.

With respect to Claim 1, Applicants essentially argues that:

a. "[a]s a threshold matter, Applicant submits that a network and algorithm are two completely different things. A *network* is a physical structure for transmission

of data. It includes routers and cables. An *algorithm* is a sequence of steps for manipulating data. It is unclear on what basis a network and an algorithm can possibly be considered even close to the same thing";

in response to this threshold matter, the examiner respectfully draws Applicants' attention to:

i. the previous Office action where it is shown that "incumbent algorithm" is being equated to "base-line network simulator" (see page 7, paragraph 15);

ii. the abstract of Cooper, lines 6-10, where it is shown that "[t]o select the options, the system generates a base-line simulation from the network architecture, which base-line simulation includes performance data on the network architecture under a predetermined scenario"; and

iii. 9:27-30 of Cooper where it is shown that the following: "[a]fter a simulator 240 creates a baseline network simulation (step 320), optimizer/combinatorial optimizer 220 receives the user preference data including user performance and cost requirements (step 330)..." is the language used by Cooper to describe a sequence of steps;

at least from these two excerpts, a base-line network simulation is obviously not a network as incorrectly interpreted by Applicants but rather an algorithm or a sequence of steps for processing information;

b. "[i]n Applicant's system, the performance of an incumbent-algorithm is *not* being simulated. It does *not* execute on manufactured data within the dry confines of some research laboratory. In Applicant's system, the incumbent-algorithm score is evaluated while the incumbent algorithm is actually executing in the real world, with all its unpredictability, using real data provided by live users";

in response to the above arguments, the examiner respectfully notes that Applicants' assertion that in their system, the performance of an incumbent-algorithm is *not* being simulated appears to be inconsistent with the claim language of Claim 1 which recites "simulating performance of a competing algorithm executing **in place of** said incumbent algorithm." Emphasis added. The interpretation of this claim language is that the performance of the execution of a competing algorithm is simulated instead of that of an incumbent algorithm. According to this language, the performance of an incumbent algorithm may be also simulated. This interpretation is deemed logical because absent an actual execution of the incumbent algorithm that could provide results which could then be evaluated, how could the performance of an incumbent algorithm be evaluated without simulating that incumbent algorithm?

Furthermore, the examiner respectfully notes that the claim language does nowhere indicate that the incumbent algorithm is actually executing in the real world or currently executing while the competing algorithm is simulated;

c. "[I]n contrast, the performance of the competing algorithm *is* being simulated. These algorithms are not actually executing on the real data. To do so, would wastefully consume bandwidth, which would in turn adversely affect the performance of the incumbent algorithm. Instead, the performances of the competing algorithms are obtained by determining what *would have* resulted had those algorithms been executing on the same data provided to the incumbent server.

Applicant's invention thus provides a way to monitor the effectiveness of several algorithms, one of which is the incumbent algorithm, as they are subjected to the same demands made by actual users. It provides a way to

answer the question "what if a different algorithm had been used on this exact same data stream." The invention thus enables an administrator of a data storage system to adaptively react in real time to changes in how users use the data storage system.

Cooper teaches nothing at all like this. There is no suggestion in *Cooper* of evaluating the performance of one "incumbent" network architecture as it carries live network traffic, with all its inherent unpredictability, and then simulating the performance of other "competing" network architectures on the identical traffic;"

in response to the above Applicants' remarks, the examiner respectfully notes that none of the purported subject matter of the present invention is anywhere claimed in the Claims. Limitations in the specification will not be read into the Claims for the purpose of avoiding the teachings of the prior art;

d. "... There is nothing in FIG. 3 that requires that an actual network be available. Apparently, what *Cooper* discloses can be carried out without being connected to any network at all;

in response to the above argument, the examiner notes again that the requirement of an actual network be available is **not** explicitly or implicitly recited in the Claims.

According to the foregoing discussion, the rejection of Claims 1-29 under 35 U.S.C. § 102(b) as being anticipated by Cooper is considered to be proper and is thus maintained.

Claim Rejections - 35 USC § 101

10. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

11. Claims 1-9, 11-13 and 14 are rejected under 35 U.S.C § 101 because the claimed invention is directed to non-statutory subject matter.

Statutory subject matter requires two things:

(1) it must be in the "useful arts," U.S. Const., art. I, § 8, cl. 8, which is equivalent to the modern "industrial" or "technological arts," defined by Congress in the four categories of "process, machine, manufacture, or composition of matter" in 35 U.S.C § 101; and if it is,

(2) it must not fall within one of the exceptions for "laws of nature, physical phenomena and abstract ideas." Under the most recent Federal Circuit cases, transformation of data by a machine (e.g., a computer) is statutory subject matter provided the claims recite a "practical application, i.e., 'a useful, concrete and tangible result.'" State St. Bank & Trust C o. v. Signature Fin. Group, Inc., 149 F.3d 1368, 1373, 47 USPQ2d 1596, 1600-01 (Fed. Cir. 1998).

In the present application, the language of Claims 1-9, 11-13 and 14 raises a question as to whether the claim is directed merely to an abstract idea that is not tied to a technological art, environment or machine which would result in a practical application producing a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 U.S.C. § under 35 U.S.C. § 101.

Furthermore, the Office's interpretation of Claims 1-9, 11-13 and 14 is that these Claims do not expressly or implicitly require performance of any steps by a machine, such as a general purpose digital computer. Structure will not be read into

the Claims for the purposes of the statutory subject matter analysis although the steps might be capable of being performed by a machine.

On this basis, Claims 1-9, 11-13 and 14 are rejected under 35 U.S.C. § 101.

Claim Rejections – 35 U.S.C. § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 1-29 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,809,282 to Cooper et al. ("Cooper").

Claims 1, 14, 16 and 29

Cooper discloses at least:

evaluating an incumbent-algorithm score indicative of a performance of an incumbent algorithm (see at least Figure 3, step 320 and related discussion in the specification; note that the claimed "incumbent algorithm" is equated to Cooper's baseline network simulation);

simulating performance of a competing algorithm executing in place of said incumbent algorithm (see at least Figure 3, steps 340, 350 and related discussion in the specification);

on the basis of said simulation, evaluating a competing-algorithm score predictive of a corresponding performance of said competing algorithm (see at least Figure 3, step 360 and related discussion in the specification); and

providing said competing-algorithm score and said incumbent-algorithm score to an output device (see at least Figure 3, step 370 – providing scores; Figure 2, item 240 and Figure 1, items 120, 122 – output device; and related discussion in the specification).

Claims 2 and 17

The rejection of base claims 1 and 16 are incorporated. Cooper further discloses *providing data indicative of a performance difference between said competing algorithm and said incumbent algorithm* (see at least Figure 3, step 370 and related discussion in the specification; the report showing the ranking in accordance with an user's preferences would help the user determine whether competing algorithms, i.e., new network simulations are preferable to the baseline network simulation).

Claims 3 and 18

Rejections of base claims 1, 16 and intervening claims 2, 17 are incorporated. Cooper further discloses *wherein providing data comprises monitoring said incumbent-algorithm score and said competing-algorithm score during a selected interval* (see at least 8:66 – 9:7).

Claims 4 and 19

Rejections of base claims 1, 16 and intervening claims 2-3, 17-18 are incorporated. Cooper further discloses *wherein providing data further comprises displaying data indicative of a performance of said incumbent algorithm and said competing algorithm during said selected interval* (see at least Figure 3, step 370 – providing scores; Figure 2, item 240

and Figure 1, items 120, 122 – output device; and related discussion in the specification).

Claims 5 and 20

Rejections of base claims and intervening claims are incorporated. Cooper does not specifically disclose *wherein displaying data comprises evaluating a ratio indicative of an extent to which said competing-algorithm score exceeds said incumbent algorithm score during said selected interval.* However, the claimed ratio is deemed inherent to Cooper's scenario assessment, architecture assessment and cost assessment (9:3-26) because in order to assess these performance criteria, a ratio has to be established.

Claims 6 and 21

The rejection of base claims 1 and 16 is incorporated. Cooper further discloses *wherein simulating performance comprises:*

obtaining meta-data characterizing an input-data stream provided to said incumbent algorithm (see at least Figure 3, steps 330, 340 and related discussion in the specification); and

simulating performance of said competing algorithm were it to operate on an input-data stream characterized by said meta-data (see at least Figure 3, steps 350, 360 and related discussion in the specification).

Claims 7 and 22

Rejections of base claims 1, 16 and intervening claims 6, 21 are incorporated. Cooper further discloses *wherein obtaining meta-data comprises maintaining statistics descriptive of said input data-stream during a selected interval* (see at least 9:17-20).

Claims 8 and 23

The rejection of base claims 1 and 16 is incorporated. Cooper does not specifically disclose *wherein evaluating a competing-algorithm score comprises incorporating a penalty into said competing-algorithm score.* However, assigning penalty would necessarily be inherent to Cooper's cost assessment so ranking could be achieved (see at least Figure 3, steps 360, 370 and related discussion in the specification; 9:20-26).

Claims 9 and 24

Rejections of base claims 1, 16 and intervening claims 8, 23 are incorporated. Cooper does not specifically disclose *selecting said penalty to be indicative of a cost associated with replacing said incumbent algorithm with said competing algorithm.* However, this feature is deemed inherent to the Cooper teachings because the objective of Cooper's cost assessment is to determine which scenario would not be cost effective (see at least Figure 3, steps 360, 370 and related discussion in the specification; 9:20-26).

Claims 10 and 25

Cooper discloses at least:

on the basis of said statistical characterization, simulating a performance of said competing algorithm were it to execute on said data-storage system in place of said incumbent algorithm (see at least Figure 3, steps 340, 350 and related discussion in the specification).

Cooper does not specifically disclose *statistically characterizing a usage pattern of said data-storage system.* However, the usage pattern is deemed inherent to Cooper's gathering of statistical information of users of network equipment (see at least 9:17-20) because without users using the network equipment and as a result their usage pattern, gathering of statistical information would not be possible.

Claims 11 and 26

The rejection of base claims 10 and 25 are incorporated. Cooper further discloses:

evaluating actual performance of said incumbent algorithm in response to said usage pattern (see at least Figure 3, step 320 and related discussion in the specification);

simulating said performance of said competing algorithm in response to said usage pattern (see at least Figure 3, steps 330, 340, 350, 360 and related discussion in the specification); and

communicating, to an output device, data indicative of a comparison between said actual performance of said incumbent algorithm and said simulated performance of said competing algorithm (see at least Figure 3, step 370 – providing scores; Figure 2, item 240 and Figure 1, items 120, 122 – output device; and related discussion in the specification).

Claims 13 and 28

Rejections of base claims 10, 25 and intervening claims 11, 26 are incorporated. Cooper further discloses *incorporating a cost of replacement into a performance selected from the group consisting of:*

(1) said actual performance of said incumbent algorithm, and

(2) said simulated performance of said competing algorithm (see at least 9:3-26).

Claims 12 and 27

The rejection of base claims 10 and 25 are incorporated. Cooper further discloses *wherein statistically characterizing a usage pattern of said data-storage system comprises generating meta-data that characterizes an input data stream to said data-storage system* (see at least Figure 3, steps 310, 330 and related discussion in the specification).

Claim 15

Cooper discloses at least:

a processor (see Fig. 1, item 102 and related discussion in the specification);

and computer-readable media having software encoded thereon, said software having instructions for causing the processor to execute (see Fig. 1, item 102and Fig. 2, item 200; and related discussion in the specification)

a data-condenser configured to receive a data-stream, said data-condenser generating meta-data characterizing said data stream (see at least Figures 2 and 7, item 240 and related discussion in the specification);

a competing-algorithm simulator in communication with said data condenser, said competing algorithm simulator generating data indicative of a performance attribute of a competing algorithm when said competing algorithm operates on a data-stream characterized by said meta-data (see at least Figure 3, Figure 2, items 210, 220, 230 and related discussion in the specification); and

a tournament manager configured to provide output data indicative of a comparison between a performance attribute of said competing algorithm and a corresponding performance attribute of an incumbent algorithm (see at least Figure 2, item 240; Figure 3, item 370 and related discussion in the specification).

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoang-Vu "Antony" Nguyen-Ba whose telephone number is (571) 272-3701. The Examiner can normally be reached on Tuesday-Friday, 7:15 to 17:15.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Tuan Dam can be reached at (571) 272-3695. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ANTONY NGUYEN-BA
PRIMARY EXAMINER

Art Unit 2192

June 8, 2005